



Blood Pressure

Version: 1/Sept 2023

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Ref: Daugherty A. JOVE 2009

Summary:

The procedure is used to assess systolic and diastolic blood pressure measurements in mice. This is a noninvasive blood pressure measurement methodology that consists of utilizing a tail-cuff placed on the tail to occlude the blood flow. Upon deflation, blood pressure sensors (using volume pressure recording technology), placed distal to the occlusion cuff, can monitor the blood pressure, heart rate, and blood flow.

Reagents and Materials:

| Reagent/Material | Vendor | Stock Number |
|--|-----------------|--------------|
| CODA non invasive blood pressure measurement system with cuffs | Kent Scientific | HT-8 |
| Mice restrainers | Kent Scientific | CODA |
| Warming pads/plates | | |
| PC equipment with CODA software | Dell | n/a |
| Lab coats/gloves/PPE | | n/a |
| Disinfectant | 10% Nolvasan | n/a |
| Disinfectant Coverage Plus | Steris | n/a |

Protocol:

1. SET-UP

- a. Acclimate mouse in their home cages in the testing room for 30 min prior testing.
- b. Set up software:
 - i. Open CODA software. Select the CODA device by clicking on “CODA 8__Chanel (1-8)”, then “
 - ii. Click on File>New Experiment to open a “Begin New Experiment” window. Enter experiment name, click next to access “Basic Session Info” window.
 - iii. Enter the session name and following set of parameters:
 - Number of Sets: 1
 - Time Between Sets: 00:00:30
 - Cycles per Set: 20

- Time Between Cycles: 00:00:05
- iv. Click Next to access the “Specimen Selection” window
- v. Click on “Manage Specimens” and enter list of subjects, save and close window
- vi. Open “Specimen Pool” assign each subject to a given channel by clicking on the right arrow, click next to open “Session Parameters” window.
- vii. Enter the following set of parameters:
 - Max Occlusion Pressure: 250
 - Deflation Time: 20
 - Min Volume: 15
- viii. Set “Display Style” to “One channel per graph”, click Next to access “Session Script”

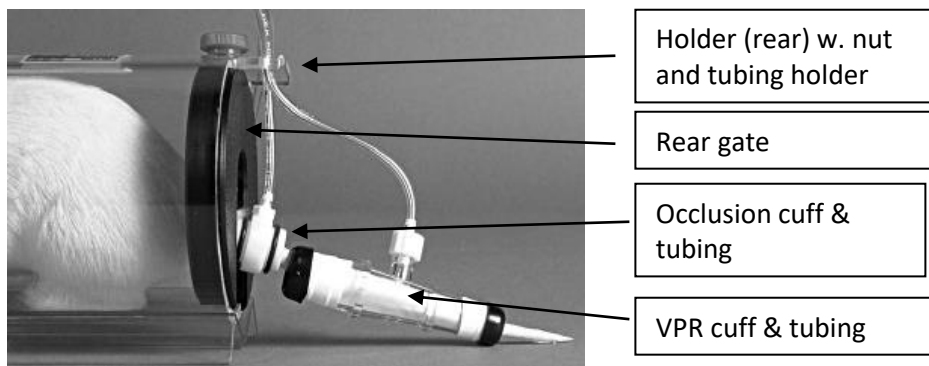
NOTE: DO NOT CLICK FINISH until ready to start experiment

2. PROCEDURE

- a. Once software is set up (Session Script), place each mouse in a restrainer. Remove the rear of the holder and gently place the mouse into the rear opening, allowing it to enter freely. Make sure the tail extends out of the rear of the holder. Replace the rear gate and tighten the nut.
- b. Adjust the nose cone so that the mouse movements are limited but it appears comfortable.
- c. Place the holders on the animal warming pads/platform.
- d. Slide the occlusion cuff to the base of the mouse’s tail.

NOTE: It should fit closely to the tail but should slide freely. If the cuff is too tight, it will compress the tail vasculature resulting in poor readings.
- e. Secure the occlusion cuff tubing into the notch of the holder.
- f. Slide the VPR cuff up the tail, larger diameter end first until it touches the occlusion cuff also secure the VPR cuff tubing into the notch of the holder.
- g. Place the holder onto the warming pads/platform; allow a period of acclimation (~5min) to let the mice thermos-regulate, prior to start the readings. Temperature should be between 32 to 35°C.

NOTE: Make sure the entire length of the animal’s tail rests on the warming surface.
- h. Click on FINISH to start the experiment.



3. CLEAN UP

- a. At the end of the procedure, disinfect the instrument and equipment with 10% Nolvasan (do not use alcohol).
- b. Clean room and bench top with Coverage Plus.

IMPORTANT NOTE:

- It is **not** necessary to acclimate the mice to the restrainers for several days prior the experiment. Each experiment should acclimate mouse cohorts consistently (typically ~ 15 min in their restrainers and onto the warming plate prior to testing).